in the lattice can be arranged to be (110). The Examiner further alleges that Claim 3 of the reference includes Pb as a possible catalytic agent to transform amorphous material into a crystalline material. The Examiner further alleges that a gate electrode is mounted on the active layer via gate insulation layer since the product is TFT. The Examiner alleges that it would have been obvious to conclude that the patent reads on the claimed invention by virtue of device material and device characteristics similarities.

The Examiner further alleges that although the patent omits to disclose the claimed "alloys" of the agents as part of the agents, claim 3 indicates the possible existence of other associated materials or alloys with the agents by the expression "at least one selected from" to indicate material types associated with the agents. Therefore, the Examiner takes the position that it would have been obvious to one skilled in the art to conclude the existence of agent alloys in the crystallized TFT layer. As for claims 6, 7, and 38, the Examiner alleges that the crystallizing agents of Yamazaki are oriented parallel to the substrate and that the claimed insulating substrates are also most common substrates in TFT formation. Further, the Examiner alleges that the plane orientation with {111} crystal-oriented layer is taught to be {110}. As for the claimed layer thickness or general layer dimension, the Examiner alleges that this is notoriously known as one of the most common variables that differ from a design to another based on an expected result. The Examiner further alleges that the specification provides no disclosure of either the critical nature of the claimed arrangement or any unexpected results. The Examiner further alleges that as for the mobility of the active layer, the element is variable and heavily dependent on doping profile and concentration of crystallizing agents. Regarding claim 7, the Examiner alleges that the crystal grains in the active layers of

the cited references are not restricted to a defined number and that therefore, it is clear that the claimed number of crystals is also covered in the references. Regarding Claim 12, the Examiner alleges that since currents in TFTs travel through the channel, and that the channel is the crystallized TFT with the claimed crystal orientation, the claimed operation is met by the prior art. Further, the Examiner alleges that although the exact terminologies as that of the claim such as "dendryte" are not used, there are crystallized regions in the active layer of the prior arts. Regarding Claim 30, 31 and 35, the Examiner alleges that the expression "seed crystal metal" is understood to be any metallic material and that the source/drain electrodes are formed on the insulating substrates of both references and between adjacent gate electrodes of adjacent TFTs. Regarding Claim 37, the Examiner alleges that the claimed crystal orientation and angles are taught in column 14, lines 35 - 65.

This rejection is traversed. In particular, it is respectfully submitted that the (110) planes defined in the Yamazaki references include both of crystalline planes of (011) and (200), which cannot be analyzed by X-ray measurement, as shown in column 23, lines 19 - 25 of Yamazaki '723. Therefore, the designation in Yamazaki merely treats the plane containing two different planes as if it were one plane and every plane becomes, as a result, identical with a substrate orientation of (111). On the other hand, the present invention does not include a (200) plane at all, and only includes a plane of (011), which is only one pure plane in crystallography. In the present specification, (110) is defined by including the equivalent planes of (110) and (101). It is only the (110) plane that provides the maximum effect of the present invention, and the present invention is the first to give the limitation of three

dimensional directions from a view of crystallography. Accordingly, the present invention is not obvious over Yamazaki '328 or '723.

Regarding Claims 30, 31 and 35, it is respectfully submitted that the Examiner's understanding that the expression "seed crystal metal" is any metallic material and that based on this understanding, that this limitation is met by the formation of source/drain electrodes on the insulating substrates of '328 and '723 is incorrect. As defined in the specification and as seen more specifically in Claim 35, the term "seed crystal metal" is not just any metallic material. In particular, the metals such as aluminum and tungsten that are used in conventional source/drain are not included. Accordingly, the limitation of the seed crystal method in the present invention is not met by the disclosure of a source/drain in the Yamazaki references.

Regarding Claim 7, the claim requires that in the channel region, two to five crystal grains having the joints of the {111} twin have {110} planes parallel to the surface of the insulator and have at least one structure coupled at one point on the polycrystalline layer. This limitation is not realized by the mere existence of a plurality of grain boundaries as disclosed in the Yamazaki references.

Accordingly, it is respectfully submitted that Claims 6, 7, 12, 30, 31, 35, 37 and 38 would not have been obvious over Yamazaki.

Rejection of Claim 19 under 35 U.S.C. §103(a) over Yamazaki '368 in view of Yamazaki '723

Claim 19 was rejected under 35 U.S.C. §103(a) as obvious over Yamazaki '368 in view of Yamazaki(U.S. Patent No. 6,462,723). The Examiner alleges that the primary reference discloses all subject matter except the claimed mobility range of the transistors. The Examiner alleges that Yamazaki '723 teaches that the multiple

TFTs in the driving and pixel circuits of the LCD device have polysilicon active layers whose mobility can be greater than 30 cm2/Vsec. The Examiner alleges that it would have been obvious to expect the active layers of the polysilicon based transistors of '368 to have the mobility taught in '723, since the material is polysilicon in both cases.

This rejection is respectfully traversed. The disclosure in Yamazaki '723 of an electron mobility of 30 cm^2/Vs or greater merely provides a range that applies generally to all ordinary semiconductor devices for display. Therefore, this disclosure in Yamazaki '723 has no meaning or usefulness as a limitation. On the other hand, Claim 19 requires that an electron mobility of 260 - 500 cm^2/Vs. As disclosed in the specification, at this value, peripheral circuits can be merged with pixels on the same substrate. This feature is neither disclosed nor suggested by Yamazaki '723

Accordingly, it is respectfully submitted that Claim 19 would not have been obvious over Yamazaki.

Conclusion

In view of the foregoing amendments and remarks, it is respectfully submitted that Claims 6, 7, 19, 30, 31, 35, 37 and 38 are in condition for allowance, as well as allowed Claims. Favorable reconsideration is respectfully requested.

Should the Examiner believe that anything further is necessary to place this application in condition for allowance, the Examiner is requested to contact applicants' undersigned attorney at the telephone number listed below.

Kindly charge any additional fees due, or credit overpayment of fees, to Deposit Account No. 01-2135 (520.39251X00).

Respectfully submitted,
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